

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

04 February 1999 (04.02.99)

International application No.

PCT/GB98/01624

Applicant's or agent's file reference

REP05729WO

International filing date (day/month/year)

03 June 1998 (03.06.98)

Priority date (day/month/year)

04 June 1997 (04.06.97)

Applicant

WILLIAMS, Stephen, Charles et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

21 December 1998 (21.12.98)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

C. Carrié

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

WO 98/55856
PCT/GB98/01624

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH
ROYAUME-UNI

Date of mailing (day/month/year) 10 December 1998 (10.12.98)		
Applicant's or agent's file reference REP05729WO		IMPORTANT NOTICE
International application No. PCT/GB98/01624	International filing date (day/month/year) 03 June 1998 (03.06.98)	Priority date (day/month/year) 04 June 1997 (04.06.97)
Applicant CAMBRIDGE SENSORS LIMITED et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
CA,EP,JP,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
None

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 10 December 1998 (10.12.98) under No. WO 98/55856

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/01624

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G01N27/403 G01N27/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 215 446 A (FUJI PHOTO FILM CO LTD) 25 March 1987 see page 6, line 8 - page 7, line 3; figures 1,2 ---	1,8
Y	EP 0 095 946 A (FUJI PHOTO FILM CO LTD) 7 December 1983 see page 15, line 19 - line 21 ---	1,8
A	WO 92 14836 A (ASULAB SA) 3 September 1992 see page 6, line 30 - page 7, line 19; figure 4 ---	1
A	EP 0 271 102 A (HORIBA LTD) 15 June 1988 see page 5, line 35 - page 6, line 15 ---	1
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

26 August 1998

Date of mailing of the international search report

02/09/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Duchatellier, M

INTERNATIONAL SEARCH REPORT

ational Application No

PCT/GB 98/01624

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 593 096 A (MEDISENSE INC) 20 April 1994 see page 6, line 37 - line 56; figures 1,2 ---	1
A	US 5 429 735 A (JOHNSON LARRY D ET AL) 4 July 1995 see column 2, line 21 - line 23 -----	6,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

Patent Application No

PCT/GB 98/01624

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0215446 A	25-03-1987	JP 62062259 A	18-03-1987
EP 0095946 A	07-12-1983	JP 1800242 C	12-11-1993
		JP 3070780 B	08-11-1991
		JP 58211648 A	09-12-1983
		US 4437970 A	20-03-1984
WO 9214836 A	03-09-1992	FR 2673289 A	28-08-1992
		AT 147107 T	15-01-1997
		AU 656360 B	02-02-1995
		AU 1221992 A	15-09-1992
		BG 96988 A	31-03-1994
		CA 2080840 A	22-08-1992
		DE 69216319 D	13-02-1997
		DE 69216319 T	03-07-1997
		EP 0526602 A	10-02-1993
		FI 924726 A	19-10-1992
		HU 66200 A, B	28-10-1994
		JP 2770250 B	25-06-1998
		PL 169972 B	30-09-1996
		SK 316592 A	12-04-1995
		US 5378628 A	03-01-1995
EP 0271102 A	15-06-1988	JP 2524740 B	14-08-1996
		JP 63225163 A	20-09-1988
		JP 1850637 C	21-06-1994
		JP 63148159 A	21-06-1988
		CN 1010251 B	31-10-1990
		CN 1038164 A, B	20-12-1989
		US 4872956 A	10-10-1989
EP 0593096 A	20-04-1994	AU 622196 B	02-04-1992
		AU 3822089 A	01-02-1990
		CA 1313397 A	02-02-1993
		EP 0352138 A	24-01-1990
		JP 2112752 A	25-04-1990
		US 5126034 A	30-06-1992
US 5429735 A	04-07-1995	AU 692861 B	18-06-1998
		AU 2325795 A	11-01-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/01624

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5429735 A		CA 2151413 A	28-12-1995
		EP 0691539 A	10-01-1996
		JP 8015210 A	19-01-1996
<hr/>			

PATENT COOPERATION TREATY


PCT

REC'D 13 SEP 1999

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference REP05729WO		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB98/01624	International filing date (day/month/year) 03/06/1998	Priority date (day/month/year) 04/06/1997	
International Patent Classification (IPC) or national classification and IPC G01N27/403			
Applicant CAMBRIDGE SENSORS LIMITED et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 1 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none">I <input checked="" type="checkbox"/> Basis of the reportII <input type="checkbox"/> PriorityIII <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicabilityIV <input type="checkbox"/> Lack of unity of inventionV <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statementVI <input type="checkbox"/> Certain documents citedVII <input checked="" type="checkbox"/> Certain defects in the international applicationVIII <input type="checkbox"/> Certain observations on the international application			
Date of submission of the demand 21/12/1998		Date of completion of this report 08.09.99	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Komenda, P Telephone No. +49 89 2399 2777	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01624

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-9 as originally filed

Claims, No.:

8 as originally filed

1-7 as received on 14/05/1999 with letter of 12/05/1999

Drawings, sheets:

1/1 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01624

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/01624

Section V:

Reference is made to the following document:

D1 = US-A-5 628 890

- N:** Document D1 reveals a device for use in the electrochemical analysis of an analyte in a liquid sample and comprises:
- a non-conductive substrate (1, reference signs according to figure 1 of D1);
 - a conductive layer (2), deposited on the substrate, in two parts (4, 5), defining a non-conducting gap therebetween;
 - an analyte-specific reagent (8) coated on the conductive layer, on one side of the gap:
 - a spacer layer (7) deposited over the conductive layer;
 - a monofilament mesh (9) coated with a surfactant (column 4, lines 56 to 61), the mesh being laid over the reagent, the reference electrode and the spacer layer;
 - and
 - a second non-conductive layer (11) adhered to the mesh layer, but not coextensive therewith, thereby providing a sample application area (12).

The difference between the device of D1 and that of claim 1 is that according to the latter the application area is at one edge of the mesh (whereas in D1 the application area is "on top" of the device) (Article 33(2) PCT).

The above distinguishing feature is also present in claims 2 to 8 (Article 33(2) PCT).

- IS:** Starting from D1, the technical problem to be solved is to provide a device for use in the electrochemical analysis which device allows for sample collection without the need of aiming at the application area.

The solution for said problem is to locate the application area at one edge of the mesh i.e. of the device.

The other documents of the international search report do not disclose devices

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/01624

where the application area is located at one edge. They all have the application area "on top" of the device onto which a sample solution is dropped. Since, moreover, the above solution is not obvious per se, an inventive activity is acknowledged for claims 1 to 8 (Article 3(3) PCT).

IA: Industrial applicability is also acknowledged (Article 33(4) PCT).

Section VII:

- 1) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- 2) The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).

If, however, the applicant is of the opinion that the two-part form would be inappropriate, then reasons therefor should be provided in the letter of reply. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of the independent claims are known from document D1 (see the PCT Guidelines PCT/GL/3 III, 2.3a).

- 3) The features of the device claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

CLAIMS

1. A device for use in the electrochemical analysis of an analyte in a liquid sample, which comprises:
- a non-conducting substrate;
 - 5 a conductive layer, deposited on the substrate, in two parts, defining a non-conducting gap therebetween;
 - an analyte-specific reagent coated on the conductive layer, on one side of the gap;
 - a reference electrode on the conductive layer, on the
 - 10 other side of the gap;
 - a spacer layer deposited over the conductive layer;
 - a monofilament mesh coated with a surfactant or chaotropic agent, the mesh being laid over the reagent, the reference electrode and the spacer layer; and
 - 15 a second non-conductive layer, adhered to the mesh layer, but not coextensive therewith, thereby providing a sample application area on the mesh.
2. A device according to claim 1, wherein the reagent is free of filler having both hydrophobic and hydrophilic
- 20 surface regions.
3. A device according to claim 1 or claim 2, wherein the analyte is glucose and the reagent is glucose dehydrogenase.
4. A device according to any preceding claim, wherein the
- 25 mesh is treated with a surfactant.
5. A device according to any preceding claim, wherein the mesh is additionally coated with a cell lytic agent.
6. A device according to any preceding claim, wherein the conductive layer comprises graphite particles, carbon
- 30 particles and a polymer binder.
7. A device according to claim 6, wherein the graphite particles have an average size of 1-20 μm and a surface area of 1-50 m^2/g , and the carbon particles have an average size of 5-70 nm and a surface area of less than 150 m^2/g .
- 35

Replaced by Article 34

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH
GRANDE BRETAGNE

RECEIVED

10 SEP 1999

GILL JENNINGS & EVERY

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

08.09.99

Applicant's or agent's file reference
REP05729WO

IMPORTANT NOTIFICATION

International application No.
PCT/GB98/01624

International filing date (day/month/year)
03/06/1998

Priority date (day/month/year)
04/06/1997

Applicant

CAMBRIDGE SENSORS LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Reddy-Lehocki, J

Tel. +49 89 2399-2288



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference REP05729WO	<div style="display: flex; justify-content: space-between;"> <div>FOR FURTHER ACTION</div> <div>See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</div> </div>	
International application No. PCT/GB98/01624	International filing date (day/month/year) 03/06/1998	Priority date (day/month/year) 04/06/1997
International Patent Classification (IPC) or national classification and IPC G01N27/403		
Applicant CAMBRIDGE SENSORS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



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- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 21/12/1998	Date of completion of this report 0 8. 09. 99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Komenda, P Telephone No. +49 89 2399 2777 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01624

I. Basis of the report

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8 as originally filed

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1/1 as originally filed

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☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/01624

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-8
	No: Claims
Inventive step (IS)	Yes: Claims 1-8
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-8
	No: Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/01624

Section V:

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 - a conductive layer (2), deposited on the substrate, in two parts (4, 5), defining a non-conducting gap therebetween;
 - an analyte-specific reagent (8) coated on the conductive layer, on one side of the gap;
 - a spacer layer (7) deposited over the conductive layer;
 - a monofilament mesh (9) coated with a surfactant (column 4, lines 56 to 61), the mesh being laid over the reagent, the reference electrode and the spacer layer;
 - and
 - a second non-conductive layer (11) adhered to the mesh layer, but not coextensive therewith, thereby providing a sample application area (12).

The difference between the device of D1 and that of claim 1 is that according to the latter the application area is at one edge of the mesh (whereas in D1 the application area is "on top" of the device) (Article 33(2) PCT).

The above distinguishing feature is also present in claims 2 to 8 (Article 33(2) PCT).

- IS:** Starting from D1, the technical problem to be solved is to provide a device for use in the electrochemical analysis which device allows for sample collection without the need of aiming at the application area.

The solution for said problem is to locate the application area at one edge of the mesh i.e. of the device.

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/01624

where the application area is located at one edge. They all have the application area "on top" of the device onto which a sample solution is dropped. Since, moreover, the above solution is not obvious per se, an inventive activity is acknowledged for claims 1 to 8 (Article 3(3) PCT).

IA: Industrial applicability is also acknowledged (Article 33(4) PCT).

Section VII:

- 1) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
- 2) The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT).

If, however, the applicant is of the opinion that the two-part form would be inappropriate, then reasons therefor should be provided in the letter of reply. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of the independent claims are known from document D1 (see the PCT Guidelines PCT/GL/3 III, 2.3a).

- 3) The features of the device claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

CLAIMS

1. A device for use in the electrochemical analysis of an analyte in a liquid sample, which comprises:
 - a non-conducting substrate;
 - 5 a conductive layer, deposited on the substrate, in two parts, defining a non-conducting gap therebetween;
 - an analyte-specific reagent coated on the conductive layer, on one side of the gap;
 - a reference electrode on the conductive layer, on the
 - 10 other side of the gap;
 - a spacer layer deposited over the conductive layer;
 - a monofilament mesh coated with a surfactant or chaotropic agent, the mesh being laid over the reagent, the reference electrode and the spacer layer; and
 - 15 a second non-conductive layer, adhered to the mesh layer, but not coextensive therewith, thereby providing a sample application area at one edge of the mesh.
2. A device according to claim 1, wherein the reagent is free of filler having both hydrophobic and hydrophilic
- 20 surface regions.
3. A device according to claim 1 or claim 2, wherein the analyte is glucose and the reagent is glucose dehydrogenase.
4. A device according to any preceding claim, wherein the
- 25 mesh is treated with a surfactant.
5. A device according to any preceding claim, wherein the mesh is additionally coated with a cell lytic agent.
6. A device according to any preceding claim, wherein the conductive layer comprises graphite particles, carbon
- 30 particles and a polymer binder.
7. A device according to claim 6, wherein the graphite particles have an average size of 1-20 μm and a surface area of 1-50 m^2/g , and the carbon particles have an average size of 5-70 nm and a surface area of less than 150 m^2/g .

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired)(12 characters maximum) REP05729WO

Box No. I TITLE OF INVENTION
ELECTRODES FOR THE MEASUREMENT OF ANALYTES
IN SMALL SAMPLE VOLUMES

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Cambridge Sensors Limited
Downhams House
Downhams Lane
Cambridge
CB4 1XT
United Kingdom

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality: GB

State (i.e. country) of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

WILLIAMS, Stephen Charles
P.O. 3559
500 Stone Pine Road
Half Moon Bay
CA 94019
USA

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (if this check-box is marked, do not fill in below.)

State (i.e. country) of nationality: GB

State (i.e. country) of residence: US

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

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Facsimile No.

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Teleprinter No.

(051) 22765 GILPAT G

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet is not to be included in the request.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

YON-HIN, Bernadette
Cambridge Sensors Limited
Downhams House
Downhams Lane
Cambridge
CB4 1XT
United Kingdom

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only *(if this check-box is marked, do not fill in below.)*

State (i.e. country) of nationality:

GB

State (i.e. country) of residence:

GB

This person is applicant for the purposes of:

☐

all designated States

☐

all designated States except the United States of America

☒

the United States of America only

☐

the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

BLAIR, Neil
122 Limes Road
Hardwick
Cambridge
CB3 7XU
United Kingdom
GB

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only *(if this check-box is marked, do not fill in below.)*

State (i.e. country) of nationality:

GB

State (i.e. country) of residence:

GB

This person is applicant for the purposes of:

☐

all designated States

☐

all designated States except the United States of America

☒

the United States of America only

☐

the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only *(if this check-box is marked, do not fill in below.)*

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of:

☐

all designated States

☐

all designated States except the United States of America

☐

the United States of America only

☐

the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only *(if this check-box is marked, do not fill in below.)*

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of:

☐

all designated States

☐

all designated States except the United States of America

☐

the United States of America only

☐

the States indicated in the Supplemental Box

☐

Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☐ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment is desired, specify on dotted line)

National Patent (if other kind of protection or treatment is desired, specify on dotted line):

- | | |
|---|---|
| <input type="checkbox"/> AL Albania | <input type="checkbox"/> LT Lithuania |
| <input type="checkbox"/> AM Armenia | <input type="checkbox"/> LU Luxembourg |
| <input type="checkbox"/> AT Austria | <input type="checkbox"/> LV Latvia |
| <input type="checkbox"/> AU Australia | <input type="checkbox"/> MD Republic of Moldova |
| <input type="checkbox"/> AZ Azerbaijan | <input type="checkbox"/> MG Madagascar |
| <input type="checkbox"/> BA Bosnia & Herzegovina | <input type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input type="checkbox"/> BB Barbados | <input type="checkbox"/> MN Mongolia |
| <input type="checkbox"/> BG Bulgaria | <input type="checkbox"/> MW Malawi |
| <input type="checkbox"/> BR Brazil | <input type="checkbox"/> MX Mexico |
| <input type="checkbox"/> BY Belarus | <input type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CA Canada | <input type="checkbox"/> NZ New Zealand |
| <input type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input type="checkbox"/> PL Poland |
| <input type="checkbox"/> CN China | <input type="checkbox"/> PT Portugal |
| <input type="checkbox"/> CU Cuba | <input type="checkbox"/> RO Romania |
| <input type="checkbox"/> CZ Czech Republic | <input type="checkbox"/> RU Russian Federation |
| <input type="checkbox"/> DE Germany | <input type="checkbox"/> SD Sudan |
| <input type="checkbox"/> DK Denmark | <input type="checkbox"/> SE Sweden |
| <input type="checkbox"/> EE Estonia | <input type="checkbox"/> SG Singapore |
| <input type="checkbox"/> ES Spain | <input type="checkbox"/> SI Slovenia |
| <input type="checkbox"/> FI Finland | <input type="checkbox"/> SK Slovakia |
| <input type="checkbox"/> GB United Kingdom | <input type="checkbox"/> SL Sierre Leone |
| <input type="checkbox"/> GE Georgia | <input type="checkbox"/> TJ Tajikistan |
| <input type="checkbox"/> GH Ghana | <input type="checkbox"/> TM Turkmenistan |
| <input type="checkbox"/> GM Gambia | <input type="checkbox"/> TR Turkey |
| <input type="checkbox"/> GW Guinea-Bissau | <input type="checkbox"/> TT Trinidad and Tobago |
| <input type="checkbox"/> HU Hungary | <input type="checkbox"/> UA Ukraine |
| <input type="checkbox"/> ID Indonesia | <input type="checkbox"/> UG Uganda |
| <input type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> JP Japan | <input type="checkbox"/> UZ Uzbekistan |
| <input type="checkbox"/> KE Kenya | <input type="checkbox"/> VN Viet Nam |
| <input type="checkbox"/> KG Kyrgyzstan | <input type="checkbox"/> YU Yugoslavia |
| <input type="checkbox"/> KP Democratic People's Republic of Korea | <input type="checkbox"/> ZW Zimbabwe |
| <input type="checkbox"/> KR Republic of Korea | |
| <input type="checkbox"/> KZ Kazakhstan | |
| <input type="checkbox"/> LC Saint Lucia | |
| <input type="checkbox"/> LK Sri Lanka | |
| <input type="checkbox"/> LR Liberia | |
| <input type="checkbox"/> LS Lesotho | |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of
 The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM

Further priority claims are indicated in the Supplemental Box ☐

The priority of the following earlier applications is hereby claimed:

Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1) GB	4 June 1997 04.06.1997	9711395.5	
item (2)			
item (3)			

Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required):

☒ The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s) : (1)

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA/

Earlier Search Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request:

Country (or regional Office):

Date (day/month/year):

Number:

Box No. VIII CHECK LIST

This international application contains the following number of sheets:

1. request : 4 sheets
2. description : 9 sheets
3. claims : 2 sheets
4. abstract : 1 sheets
5. drawings : 1 sheets

Total : 17 sheets

This international application is accompanied by the item(s) marked below:

1. ☐ separate signed power of attorney
2. ☒ copy of general power of attorney
3. ☐ statement explaining lack of signature
4. ☐ priority document(s) identified in Box No. VI as item(s):
5. ☒ fee calculation sheet
6. ☐ separate indications concerning deposited microorganisms
7. ☐ nucleotide and/or amino acid sequence listing (diskette)
8. ☐ other (specify):

Figure No. _____ of the drawings (if any) should accompany the abstract when it is published.

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

For the Applicant
Gill Jennings & Every

PERRY, Robert Edward

Date: 3 June 1998

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority specified by the applicant: ISA/	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid	

For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference REP05729W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 98/ 01624	International filing date (day/month/year) 03/06/1998	(Earliest) Priority Date (day/month/year) 04/06/1997
Applicant CAMBRIDGE SENSORS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☐ Unity of invention is lacking (see Box II).

3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the title, ☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is:

Figure No. 1a ☐ as suggested by the applicant.

☐ None of the figures.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/01624

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G01N27/403 G01N27/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 215 446 A (FUJI PHOTO FILM CO LTD) 25 March 1987 see page 6, line 8 - page 7, line 3; figures 1,2 ---	1,8
Y	EP 0 095 946 A (FUJI PHOTO FILM CO LTD) 7 December 1983 see page 15, line 19 - line 21 ---	1,8
A	WO 92 14836 A (ASULAB SA) 3 September 1992 see page 6, line 30 - page 7, line 19; figure 4 ---	1
A	EP 0 271 102 A (HORIBA LTD) 15 June 1988 see page 5, line 35 - page 6, line 15 --- -/--	1

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

26 August 1998

Date of mailing of the international search report

02/09/1998

Name and mailing address of the ISA

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Fax: (+31-70) 340-3016

Authorized officer

Duchatellier, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/01624

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 593 096 A (MEDISENSE INC) 20 April 1994 see page 6, line 37 - line 56; figures 1,2 ---	1
A	US 5 429 735 A (JOHNSON LARRY D ET AL) 4 July 1995 see column 2, line 21 - line 23 -----	6,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/01624

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			AT 147107 T	15-01-1997
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			JP 1850637 C	21-06-1994
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			CN 1038164 A, B	20-12-1989
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			AU 3822089 A	01-02-1990
			CA 1313397 A	02-02-1993
			EP 0352138 A	24-01-1990
			JP 2112752 A	25-04-1990
			US 5126034 A	30-06-1992
US 5429735	A	04-07-1995	AU 692861 B	18-06-1998
			AU 2325795 A	11-01-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/01624

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5429735	A	CA 2151413 A	28-12-1995
		EP 0691539 A	10-01-1996
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